

**IN THE CLAIMS:**

Please amend the claims as follows:

Claims 1-12 (Canceled).

Claim 13 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate with laser light while positioning a light-converging point within the substrate, so as to form a modified region due to multiphoton absorption within the substrate, and causing the modified region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and

grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 14 (Previously Presented): A substrate dividing method according to claim 13, wherein the substrate is a semiconductor substrate.

Claim 15 (Previously Presented): A substrate dividing method according to claim 14, wherein the modified region is a molten processed region.

Claim 16 (Previously Presented): A substrate dividing method according to claim 13, wherein the substrate is an insulating substrate.

Claim 17 (Previously Presented): A substrate dividing method according to any one of claims 13-16, wherein a front face of the substrate is formed with a functional device; and wherein a rear face of the substrate is ground in the step of grinding the substrate.

Claim 18 (Previously Presented): A substrate dividing method according to claim 17, wherein the step of grinding the substrate includes a step of subjecting the rear face of the substrate to chemical etching.

Claim 19 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region including a crack region within the substrate, and causing the modified region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and  
grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 20 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-

converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region including a molten processed region within the substrate, and causing the modified region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and

grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 21 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1 ns or less, so as to form a modified region including a refractive index change region which is a region with a changed refractive index within the substrate, and causing the modified region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and

grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 22 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate which is made of a semiconductor material with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less,

so as to form a modified region within the substrate, and causing the modified region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 23 (Previously Presented): A substrate dividing method comprising the steps of: irradiating a substrate which is made of a piezoelectric material with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region with the substrate, and causing the modified region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 24 (Previously Presented): A substrate dividing method comprising the steps of: irradiating a substrate which is made of a semiconductor material with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, and causing the molten processed region to form a starting point region for cutting along a line along which the substrate should be cut in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and

grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 25 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate with laser light while positioning a light-converging point within the substrate, so as to form a modified region due to multiphoton absorption within the substrate, and causing the modified region to form a starting point region for cutting along each line along which the substrate should be cut and the lines being arranged in a lattice for the substrate, in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and  
grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness, so as to divide the substrate into a plurality of chips along the lines along which the substrate should be cut.

Claim 26 (Previously Presented): A substrate dividing method comprising the steps of:  
irradiating a substrate made of a semiconductor material with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, and causing the molten processed region to form a starting point region for cutting along a line along which the substrate should be cut, in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and  
grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness.

Claim 27 (Previously Presented): A substrate dividing method comprising the steps of:

irradiating a substrate made of a semiconductor material with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, and causing the molten processed region to form a starting point region for cutting along each line along which the substrate should be cut and the lines being arranged in a lattice for the substrate, in the substrate inside by a predetermined distance from a laser light incident face of the substrate; and

grinding the substrate after the step of forming the starting point region for cutting such that the substrate attains a predetermined thickness, so as to divide the substrate into a plurality of chips along the lines along which the substrate should be cut.

Claim 28 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a modified region due to multiphoton absorption within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 29 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region including a crack region within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 30 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-

converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region including a molten processed region within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 31 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1 ns or less, so as to form a modified region including a refractive index change region which is a region with a changed refractive index within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be



cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 32 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 33 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate which is made of a piezoelectric material, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region with the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 34 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, with the molten processed region forming a starting point region serving as a starting

point for cutting the substrate along a line along which the substrate is to be cut and with the molten processed region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 35 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a modified region due to multiphoton absorption within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along each line along which the substrate is to be cut and the lines being arranged in a lattice for the substrate, and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the lines along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 36 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, with the molten processed region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut, and with the molten processed region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 37 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, with the molten processed region forming a starting point region serving as a starting point for cutting the substrate along each line along which the substrate is to be cut and the lines

being arranged in a lattice for the substrate, and with the molten processed region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness; and

cutting the substrate along the lines along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 38 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a modified region due to multiphoton absorption within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 39 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region including a crack region within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 40 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region including a molten processed region within the substrate, with the modified

region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 41 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1 ns or less, so as to form a modified region including a refractive index change region which is a region with a changed refractive index within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 42 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 43 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:



irradiating a substrate which is made of a piezoelectric material, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate under a condition with a peak power density of at least  $1 \times 10^8$  (W/cm<sup>2</sup>) at the light-converging point and a pulse width of 1  $\mu$ s or less, so as to form a modified region with the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 44 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, with the molten processed region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut and with the

molten processed region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 45 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a modified region due to multiphoton absorption within the substrate, with the modified region forming a starting point region serving as a starting point for cutting the substrate along each line along which the substrate is to be cut and the lines being arranged in a lattice for the substrate, and with the modified region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 46 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, with the molten processed region forming a starting point region serving as a starting point for cutting the substrate along a line along which the substrate is to be cut, and with the molten processed region being located inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 47 (New): A method of manufacturing a semiconductor device formed using a substrate dividing method, the manufacturing method comprising:

irradiating a substrate, the substrate comprising semiconductor material and having a surface formed with at least one semiconductor device, with laser light while positioning a light-converging point within the substrate, so as to form a molten processed region within the substrate, with the molten processed region forming a starting point region serving as a starting point for cutting the substrate along each line along which the substrate is to be cut and the lines being arranged in a lattice for the substrate, and with the molten processed region being located

inside the substrate at a position which is a predetermined distance from a laser light incident face of the substrate;

grinding the substrate after the step of forming the starting point region for cutting the substrate such that the substrate attains a predetermined thickness, so as to cut the substrate along the line along which the substrate is to be cut in order to provide at least one manufactured semiconductor device.

Claim 48 (New): A substrate dividing method according to claim 13, wherein the substrate is ground such that the modified region remains in the substrate in the step of grinding the substrate.

Claim 49 (New): A substrate dividing method according to claim 24, wherein the substrate is ground such that the modified region remains in the substrate in the step of grinding the substrate.

Claim 50 (New): A substrate dividing method according to claim 26, wherein the substrate is ground such that the modified region remains in the substrate in the step of grinding the substrate.

Claim 51 (New): A substrate dividing method according to claim 27, wherein the substrate is ground such that the modified region remains in the substrate in the step of grinding the substrate.

Claim 52 (New): A substrate dividing method according to claim 13, wherein the substrate is ground such that at least a part of a fracture generated from the starting point region for cutting acting as a start point in the thickness direction of the substrate remains in the substrate and the modified region does not remain in the substrate in the step of grinding the substrate.

Claim 53 (New): A substrate dividing method according to claim 24, wherein the substrate is ground such that at least a part of a fracture generated from the starting point region for cutting acting as a start point in the thickness direction of the substrate remains in the substrate and the modified region does not remain in the substrate in the step of grinding the substrate.

Claim 54 (New): A substrate dividing method according to claim 26, wherein the substrate is ground such that at least a part of a fracture generated from the starting point region for cutting acting as a start point in the thickness direction of the substrate remains in the substrate and the modified region does not remain in the substrate in the step of grinding the substrate.

Claim 55 (New): A substrate dividing method according to claim 27, wherein the substrate is ground such that at least a part of a fracture generated from the starting point region for cutting acting as a start point in the thickness direction of the substrate remains in the

substrate and the modified region does not remain in the substrate in the step of grinding the substrate.